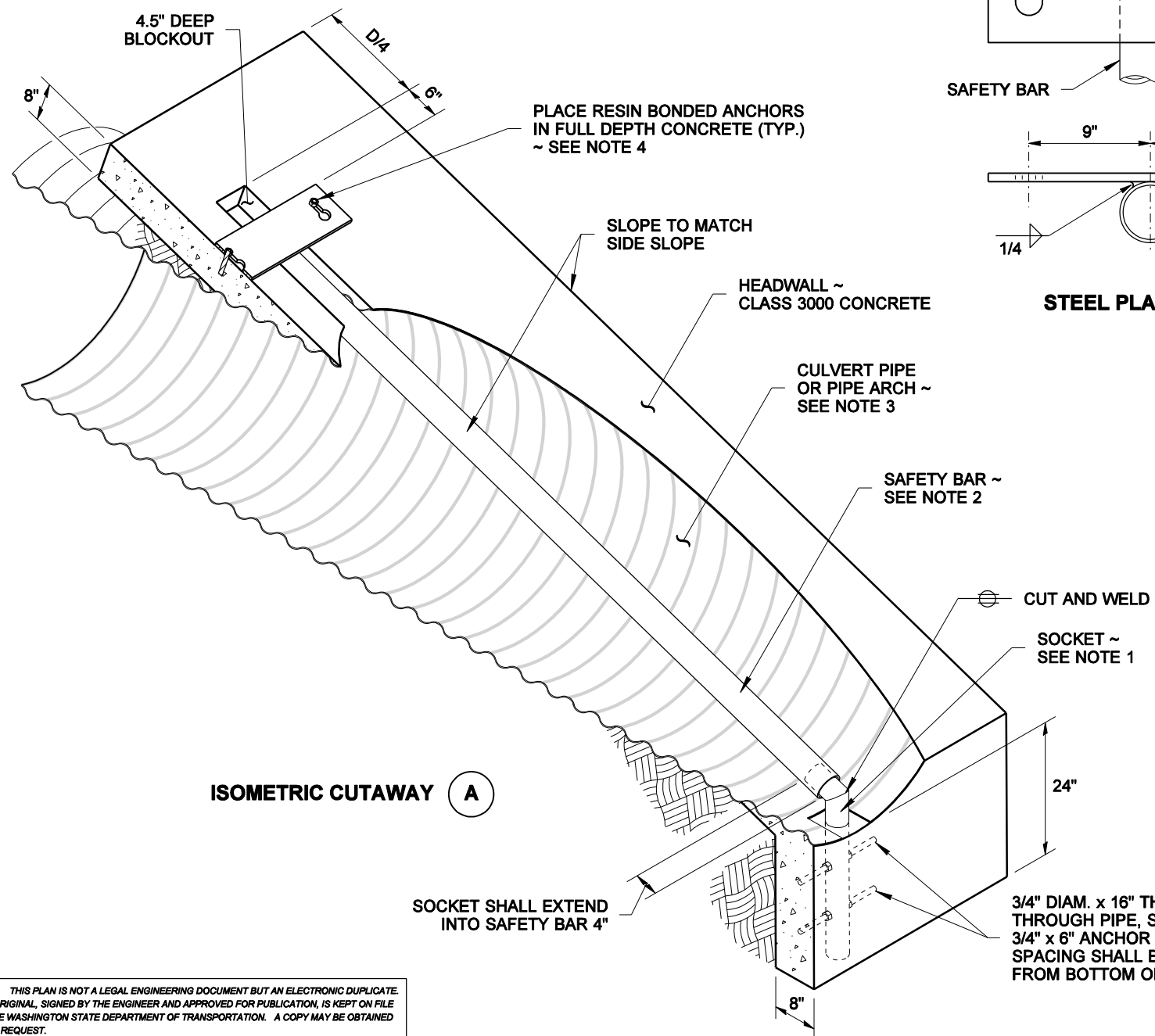


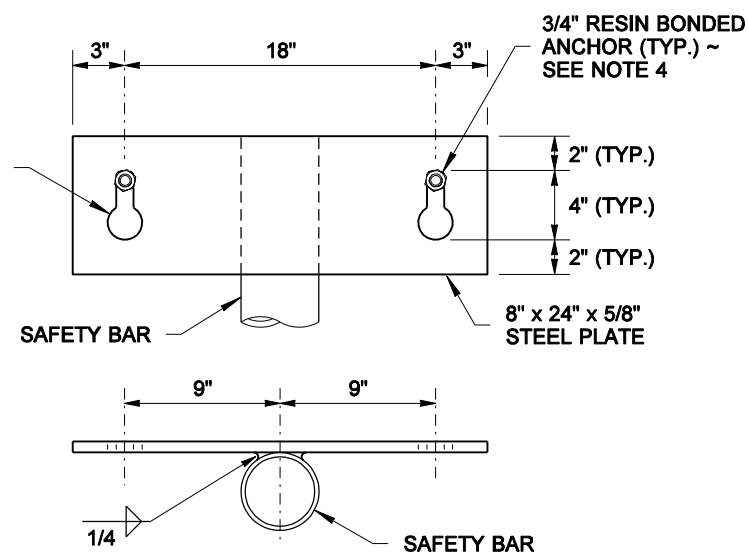
TOP VIEW
CULVERT IS PERPENDICULAR TO ROADWAY



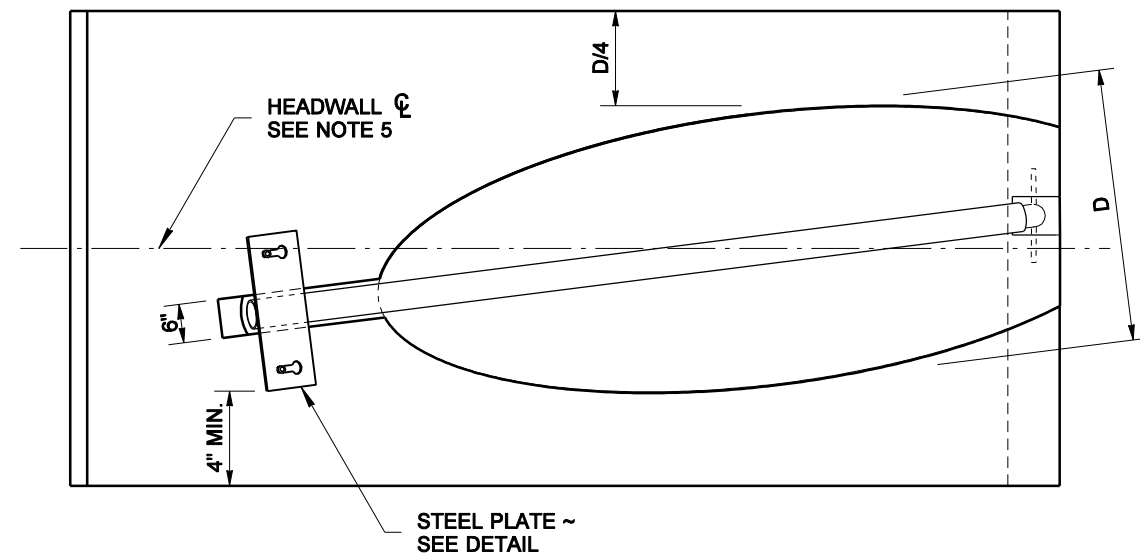
CULVERT DIAM.	NUMBER OF BARS REQUIRED
UP TO 36"	NONE
42" ~ 60"	1
66" ~ 90"	2
96" ~ 120"	3

NOTES

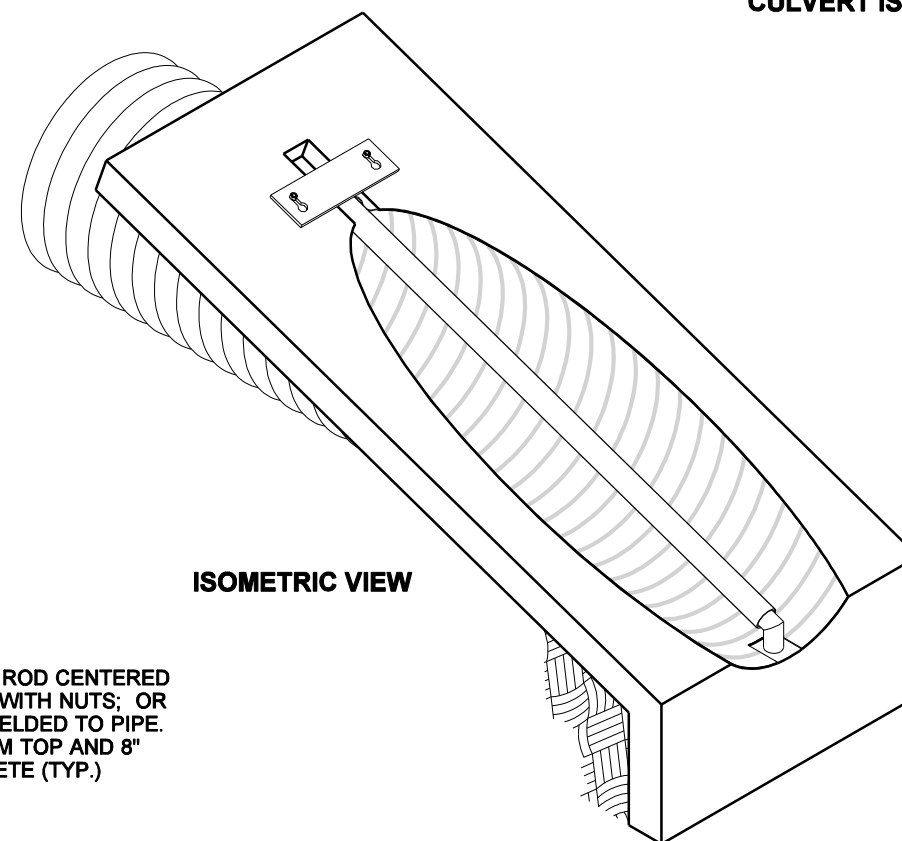
- Sockets shall be 3" extra strong steel pipe (3 1/2" O.D.). Sockets must be the proper angle and height so that safety bars are parallel with headwall and side slope, and are easily removable.
- Safety Bars shall be 4" extra strong steel pipe (4 1/2" O.D.), or 4 1/2" O.D. (.250" wall thickness) steel tubing. Length shall be the minimum required to achieve Resin Bonded Anchor placement in full depth concrete (20' maximum). When multiple bars are required (see table) place bars at equal spacing (30" max.).
- Bevel culvert pipe to match side slope.
- Resin bonded anchors shall be 7" in length (5" embedment).
- Centerline of headwall shall be normal to roadway centerline.



STEEL PLATE DETAIL



TOP VIEW
CULVERT IS SKEWED TO ROADWAY



EXPIRES JULY 1, 2005

TYPE 1 SAFETY BARS FOR STEPPED CULVERT PIPE OR PIPE ARCH STANDARD PLAN B-9a

SHEET 1 OF 1 SHEET

APPROVED FOR PUBLICATION

Harold J. Peterfeso 11-23-04

STATE DESIGN ENGINEER DATE
Washington State Department of Transportation

NOTE: THIS PLAN IS NOT A LEGAL ENGINEERING DOCUMENT BUT AN ELECTRONIC DUPLICATE. THE ORIGINAL, SIGNED BY THE ENGINEER AND APPROVED FOR PUBLICATION, IS KEPT ON FILE AT THE WASHINGTON STATE DEPARTMENT OF TRANSPORTATION. A COPY MAY BE OBTAINED UPON REQUEST.

DRAWN BY: ADAM COCHRAN